

Quant first project report

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1 The Quant workflow

1. **Universe selection.** We define some universe of stocks that have some self similarity. Also, we should eliminate all stocks prohibited or illegal to trade.
2. **Single α factor model.** Define and evaluate individual expressions which rank the cross section of equities.
3. **Alpha combination .** Combine many single alpha factors into a signal α factor. The combined alpha factor will have better prediction power than the best single alpha factor. This is because of the noise from the α factors cancel each other out.
4. **Risk model** Define and calculate a set of risk factors you want to use to constrain you portfolio.
5. **portfolio construction** Implement a process which takes your final combined alpha and your risk model and produces a target portfolio that minimises risk under your model.
6. **Execution Implement** a trading process to transition the current portfolio to the target portfolio.

2 The Competition requirements

First, you need to use a cross-sectional, long-short equity strategy. Inaddtion you must also have

- Positive returns.
- Leverage between 0.8x-1.1x.
- Low position concentration.
- Low beta-to-SPY.
- Mid-range turnover.
- Long and short positions.
- Trades liquid stocks.
- Low exposure to sector risk.
- Low exposure to style risk.
- Place orders with Optimize API.

3 Next things to research

- Factor analysis <https://www.quantopian.com/lectures/factor-analysis-with-alphas>
- Morningstar funementals - fuel and the transport industry
https://www.quantopian.com/docs/data-reference/morningstar_fundamentals